

**CITY COUNCIL STUDY SESSION**

## Tree Canopy Assessment Results

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**DIRECTION NEEDED FROM COUNCIL****INFORMATION  
ONLY**

This presentation is for information only, to present the results of the 2017 Tree Canopy Assessment and discuss the findings from the report. Staff will return at a future meeting to discuss proposed updates to the Environmental Stewardship Initiative strategic plan.

**RECOMMENDATION**

N/A

**BACKGROUND & ANALYSIS**

Staff will provide an update on the results of the recently completed 2017 Tree Canopy Assessment. This updated study found that as of 2017, the Citywide tree canopy in Bellevue is 37 percent. The presentation will review the methodology and key findings from the tree canopy assessment (Attachment A: 2017 Tree Canopy Assessment Fact Sheet and Attachment B: 2017 Tree Canopy Assessment Report), including the tree canopy for different land use types, neighborhoods, schools, stream corridors, and drainage basins.

**Background**

The City of Bellevue last completed a tree canopy assessment in 2007, and recently completed this updated assessment through a regional effort coordinated by the King Conservation District to develop tree canopy assessments for 13 cities in South King County. The assessment was performed by Plan-It Geo, a leading tree canopy assessment and urban forestry software firm, using the latest methods and data sets.

The City has a longstanding history of assessing the tree canopy, and completed tree canopy assessments in 1986, 1996, and 2007. As South Bellevue grew in the 1980's and 1990's, according to the 2007 American Forests report, the tree canopy declined from 45 percent in 1986, to 40 percent in 1996, to 36 percent in 2007. In the 2007 Tree Canopy Assessment, American Forests also recommended a goal of 40 percent tree canopy Citywide, which the City adopted as a goal in the Comprehensive Plan in 2015.

**Key Findings**

The following key findings from the tree canopy assessment establish a new baseline for measuring progress for Bellevue's tree canopy and identify areas for potential growth of tree canopy. The 2017 assessment uses the most current data sets and methods, which will allow for greater comparability

with future tree canopy assessments. It should be noted that differences in methodology between the 2007 and 2017 study make a comparison between the two years difficult, which is addressed further in the methodology section. The key findings include:

- 37 percent Citywide tree canopy.
- 40 percent impervious surfaces Citywide.
- Bellevue parks have a significant canopy cover of 65 percent overall.
- The majority of the City's tree canopy is in suburban residential areas, with 65 percent of all canopy. Suburban residential also accounts for the greatest potential for growth of canopy.
- Schools are another land use type with potential for canopy growth, as the average canopy on Bellevue schools is only 24 percent.
- Achieving the 40 percent canopy goal will take time – approximately 670 acres of additional tree canopy is needed to achieve this goal.

## Summary of Results

A summary of the key results is provided below, and further information can be found in Attachments A and B. The study analyzed tree canopy by land use type and the distribution of the tree canopy across various land use types, which is summarized in Table 1. The study found that the majority of the tree canopy in Bellevue is in suburban residential neighborhoods, which include 65 percent of the tree canopy or 14,131 acres. Tree canopy in parks was analyzed separately, and while heavily forested at 64 percent tree canopy coverage, this represents only 12 percent of the total Citywide tree canopy. The assessment also included a high level analysis of possible planting areas, to identify areas which could potentially benefit from more tree planting. The report also references the recommended canopy cover by land use from the 2007 American Forests assessment, which is included in Table 1. These best practice recommendations for canopy by land use in the table below, can be useful in helping identify possible areas for additional tree canopy.

**Table 1: Tree Canopy by Land Use**

	Total Area		Urban Tree Canopy			Possible Planting Area			Recommended Canopy
	Acres	Dist. <sup>1</sup>	Acres	%	Dist.	Acres	%	Dist.	
Central Business District	387	2%	39	10%	0%	131	34%	2%	15%
Commercial & Mixed Use	2,747	13%	566	21%	7%	1,029	37%	17%	25%
Industrial	220	1%	58	26%	1%	74	34%	1%	25%
Parks	2,544	12%	1,626	64%	20%	669	26%	11%	25%
Suburban Residential	14,131	65%	5,151	36%	65%	3,651	26%	61%	50%
Urban Residential	1,550	7%	520	34%	7%	433	28%	7%	35%
Totals	21,580	100%	7,961	37%	100%	5,987	28%	100%	40%

<sup>1</sup> "Dist." Is the distribution of canopy between the various land use types.

The 2017 Tree Canopy Assessment looked at the tree canopy using several new approaches, including assessing the tree canopy by neighborhood, right-of-way, schools, streams, and drainage basins. The tree canopy assessment by neighborhood, shown below in Table 2, provides a useful view of the current tree canopy in each neighborhood and the potential for additional tree canopy growth by neighborhood.

**Table 2: Tree Canopy by Neighborhood**

	Total Area		Urban Tree Canopy			Possible Planting Area		
	Acres	Dist.	Acres	%	Dist.	Acres	%	Dist.
Bel-Red	963	4%	148	15%	2%	379	39%	6%
Bridle Trails	2,022	9%	977	48%	12%	559	28%	9%
Cougar Mountain / Lakemont	2,349	11%	1,155	49%	15%	573	24%	10%
Crossroads	812	4%	225	28%	3%	256	32%	4%
Downtown	432	2%	45	10%	1%	148	34%	2%
Eastgate	1,759	8%	586	33%	7%	498	28%	8%
Factoria	387	2%	83	21%	1%	126	33%	2%
Lake Hills	2,260	11%	689	31%	9%	604	27%	10%
Newport	1,706	8%	720	42%	9%	425	25%	7%
Northeast Bellevue	1,413	7%	427	30%	5%	321	23%	5%
Northwest Bellevue	1,321	6%	438	33%	6%	387	29%	6%
Somerset	1,307	6%	584	45%	7%	289	22%	5%
West Bellevue	1,683	8%	621	37%	8%	563	33%	9%
West Lake Sammamish	1,174	5%	472	40%	6%	285	24%	5%
Wilburton	1,109	5%	416	38%	5%	374	34%	6%
Woodridge	728	3%	289	40%	4%	190	26%	3%
Totals	21,425	100%	7,875	37%	100%	5,977	28%	100%

The 2017 Tree Canopy Assessment provides an updated baseline for Bellevue, which can be used for developing strategies to achieve the 40 percent tree canopy goal. To achieve the 40 percent tree canopy goal, approximately<sup>2</sup> 670 acres of additional tree canopy is needed, which can be achieved through a combination of growth of existing canopy, new tree plantings, and a reduction in existing canopy removal. This assessment provided a high-level analysis of possible planting areas and identified nearly 6,000 acres of land which could potentially support additional tree canopy, although some of these areas may not be suitable for canopy establishment. This possible planting area study will need to be further refined, to identify the most opportune areas for additional tree planting and canopy growth. Increasing tree canopy will take time, possibly decades, to achieve the 40 percent tree canopy goal. Further study of the growth potential of the existing canopy, along with an analysis of the number of trees to plant, and timeframe for achieving the 40 percent goal, is needed.

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<sup>2</sup> This estimate for additional canopy is based on the citywide tree canopy as of August 2017, which does take into account the tree canopy after the clearing and grading for Eastlink, but does not account for any possible losses since August 2017 or for any upcoming major projects.

## **Methodology**

The 2017 tree canopy assessment used 2017 one-meter aerial imagery and light detection and ranging (LIDAR) data from King County. The methods used by Plan-It Geo were also used for the 13 other cities in South King County and for several others in the County, such as Kirkland and Mercer Island, thereby ensuring consistency in methodology and data sets. The assessment also includes a high-level analysis of potential planting areas (PPA), which are primarily impervious areas or other areas with the potential to increase tree canopy.

The assessment uses best practice guidelines for remote sensing and urban tree canopy assessments and includes an accuracy assessment of the 2007 and 2017 analyses. The 2007 tree canopy was updated to be 37.4 percent, as the boundary for the study was expanded to include the full City study area included in the Comprehensive Plan, which includes the portion of Coal Creek Park outside of Bellevue City limits that is owned and maintained by the City of Bellevue, along with the Urban Growth Area outside of the City boundary in Cougar Mountain. Both areas are heavily forested and contributed to an increase in the adjusted 2007 canopy, as compared to the previous 2007 report.

The project sought to compare the change in tree canopy from 2007 to 2017, but found that due to differences in methodology, data sources, and accuracy levels, it was not feasible to provide an accurate assessment of the change in tree canopy between the two years. The canopy change analysis is included in the report, however further analysis is needed to understand what change can be attributed to different methodologies, versus the changes from actual growth or loss of tree canopy.

One of the more significant changes in methodologies between the 2007 and 2017 reports is for the analysis of the tree canopy in the forested areas of Bellevue's parks, which in 2007 were analyzed to have 100 percent tree canopy coverage. In the 2017 study, Plan-It Geo assessed these areas to have approximately 95 percent canopy and reclassified the remaining canopy as shrubs or non-canopy vegetation, due to differences in remote sensing image processing. The canopy in these areas has not changed significantly, but this change in methodology appears to show a loss of tree canopy in parks. This apparent canopy loss due to new data collection methodology, however, does not represent a loss in the cumulative environmental benefits provided by the surrounding canopy and vegetative coverage.

## **Recommendations and Next Steps**

The study found that the majority of the tree canopy is on private property, and that private property has the most area for potential additional canopy growth. Bellevue right-of-way, schools, and streams also could benefit from increases in canopy. Staff will work to disseminate the results of this study to Bellevue residents and community partners, and this baseline assessment will be particularly useful for Neighborhood Area Planning. In addition, staff are also preparing an education and outreach program about the value and benefits of trees.

Staff will return to Council later in the fall with an overview of the plans to update the Environmental Stewardship Initiative Strategic Plan. Tree canopy will be one of the focus areas of the plan, and the planning process is expected to include an analysis of strategies to achieve the 40 percent tree canopy goal.

## **POLICY & FISCAL IMPACTS**

As a result of changes in tree canopy over several decades, the City developed several policies in the Comprehensive Plan to encourage the preservation and growth of Bellevue's urban forest to ensure Bellevue's character as a "City in a Park" (EN-12, PA-30, and PA-31). This presentation addresses several Comprehensive Planning policies related to trees, including the following:

- EN-12. Work toward a Citywide tree canopy target of at least 40 percent canopy coverage that reflects our "City in a Park" character and maintain an action plan for meeting the target across multiple land use types including right-of way, public lands, and residential and commercial uses.
- EN-46. Make low impact development the preferred and commonly-used approach to site development to minimize impervious surfaces, native vegetation loss, and stormwater runoff.
- PA-29. Design, construct, operate, and maintain parklands and facilities to preserve the ecology of natural systems on parklands.
- PA-30. Protect and retain, in a natural state, significant trees and vegetation in publicly and privately-dedicated greenbelt areas.
- PA-31. Manage Bellevue's forest resources, including street trees, formal plantings, and self-sustaining natural stands, to ensure their long-term vitality.

The tree canopy assessment helps to further Council's policies around managing the City's tree canopy and tracking progress toward a 40 percent tree canopy goal. This presentation also responds to Council's 2018-2020 priority #11 related to the Environmental Stewardship Initiative, to review progress of the Environmental Stewardship Initiative and analyze additional steps that the City may take to achieve environmental goals (e.g., tree canopy).

## **OPTIONS**

N/A

## **ATTACHMENTS & AVAILABLE DOCUMENTS**

- A. Bellevue 2017 Tree Canopy Assessment Fact Sheet
- B. Bellevue 2017 Tree Canopy Assessment Report

## **AVAILABLE IN COUNCIL LIBRARY**

Environmental Stewardship Initiative Strategic Plan 2013-2018